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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/648,861
Filing Date: August 25, 2000
Appellant(s): SARTHI ET AL.

MAILED

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GROUP 3600

Carl A. Ronald
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed **on July 25th , 2007 appealing from the Office action mailed on May 5th , 2006.

(1) Real Party in interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,799,286	MORGAN et al.	8-1998
6,115,691	ULWICK	9-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 42-56 are rejected under 35 U.S.C. 103 (a). This rejection is set forth in the prior Office Action mailed on 5/4/06. This rejection is set forth below as it appears in the previous Office Action mailed on 5/4/06.

Claims 42-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al (5,799,286) hereinafter Morgan in view of Ulwick (6,115,691).

(A) As per claim 42, Morgan discloses a computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process (See Morgan, Col.7, lines 14-44);

identifying measurable drivers for each of the activities (See Morgan, Col.7, lines 14-44);

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities (See Morgan, Col.20, lines 13-61).

Morgan does not explicitly disclose that the method having establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

However, these features are known in the art, as evidenced by Ulwick. In particular, Ulwick suggests that the method having establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only (See Ulwick, Col.1, lines 41-67; Col.3, lines 27-67);

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities (See Ulwick, Col.1, lines 41-67 to Col.2, line 12); and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process (See Ulwick, Col.1, lines 14-67 to Col.2, line 12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that

produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process (See Ulwick, Col.9, lines 5-17).

(B) As per claim 43, Ulwick discloses the computer-implemented method further comprising:

selecting a plurality of constraints (See Ulwick, Fig.17, element 211; Col.22, lines 37-67),

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints (See Ulwick, Fig.17, element 211; Col.22, lines 37-67).

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(C) As per claim 44, Ulwick discloses the computer-implemented method further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm (See Ulwick, Col.22, lines 37-67),

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm (See Ulwick, Col.3, lines 34-65); and

reconstructing a physical representation of said activities and said drivers using said optimized model (See Ulwick, Col.17, lines 21-67);

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(D) As per claim 45, Ulwick discloses the computer-implemented method wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity (See Ulwick, Col.).

(E) As per claim 46, Ulwick discloses the computer-implemented method further comprising:

revising said model using the results from said optimization step (See Ulwick, Col.21, lines 48-56).

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(F) As per claim 47, Ulwick discloses the computer-implemented method wherein selecting said plurality of constraints includes selecting economic and non-economic constraints (See Ulwick, Fig.17, element 211; Col.22, lines 37-67).

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(G) As per claim 48, Ulwick discloses the computer-implemented method wherein identifying measurable drivers includes identifying economic and non-economic drivers (See Ulwick, Fig.17, element 211; Col.22, lines 37-67).

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(H) As per claim 49, Ulwick discloses the computer-implemented method wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising:
costing each said measurable driver for said at least one of fixed and variable components thereof (See Ulwick, Col.17, lines 30-43).

The motivation for combining the respective teachings of Morgan and Ulwick are as discussed above in the rejection of claim 42, and incorporated herein.

(I) As per claim 50, Morgan discloses a system, comprising:

a computer (See Morgan, Col.3, lines 55-64);

input and output devices in communication with said computer (See Morgan, Col.3, lines 64 to Col.4, line 11); and

a memory encoded with a computer program (See Morgan, Col.4, lines 44-60), which, when executed by said computer, causes said computer to perform the following:

allow a user to identify activities that comprise a process,

further allow said user to identify measurable drivers for each of the activities,

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities (See Morgan, Col.6, lines 14-63).

Morgan does not explicitly disclose that the system having establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

However, these features are known in the art, as evidenced by Ulwick. In particular, Ulwick suggests that the method having establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only (See Ulwick, Col.1, lines 41-67; Col.3, lines 27-67),

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities (See Ulwick, Col.1, lines 41-67 to Col.2, line 12), and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process (See Ulwick, Col.1, lines 14-67 to Col.2, line 12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process (See Ulwick, Col.9, lines 5-17).

(J) Claim 53 differs from claims 42 and 50 by reciting a computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following.

As per this limitation, it is noted that Morgan discloses allow a user to identify activities that comprise a process (See Morgan, Col.7, lines 14-44);

further allow said user to identify measurable drivers for each of the activities (See Morgan, Col.7, lines 14-44);

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities (See Morgan, Col.20, lines 13-61) and Ulwick discloses establish a relationship between various drivers by representing each non-

bridge variable driver in terms of one or more of said bridge variables only (See Ulwick, Col.1, lines 41-67; Col.3, lines 27-67);

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities (See Ulwick, Col.1, lines 41-67 to Col.2, line 12); and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process (See Ulwick, Col.1, lines 41-67 to Col.2, line 12).

Thus, it is readily apparent that these prior art systems utilize a computer-readable data storage medium containing program instructions, which, when executed by a processor to perform their specified function.

The remainder of claim 53 is rejected for the same reasons given above for claims 42 and 50, and are incorporated herein.

(K) Claims 51-52 and 54-55 recite the underlying process steps of the elements of claims 44-45, and respectively. As the various elements of claims 44-45 have been shown to be either disclosed by or obvious in view of the collective teachings of Morgan and Ulwick, it is readily apparent that the apparatus disclosed by the applied prior art performs the recited underlying functions. As such, the limitations recited in claims 51-52 and 54-55 are rejected for the same reasons given above for the method claims 44-45, and incorporated herein.

(L) As per claim 56, Ulwick discloses the storage medium wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user (See Ulwick, Col.22, lines 37-67 to Col.23, line 13).

(10) Response to Argument

In the Appeal Brief filed on 7/25/07, Appellant makes the following arguments:

(i) The Office Action has failed to establish a prima facie case of obviousness with respect to claims 42-56.

(ii) The Office Action has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

(iii) Morgan and Ulwick actually teaches away from the present invention.

(iv) Morgan does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and it thus not robust enough to handle a modern supply chain evaluation.

(v) Ulwick does not disclose any method of determining these measurable parameters.

(vi) The Office Action unintentionally relied upon impermissible hindsight in making its determination.

(vii) There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

(viii) Morgan and Ulwick do not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost.

(ix) Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or non-linear programming algorithm.

Examiner will address Appellant first argument and related points in sequence as they appear in the Brief.

(B) With respect to Appellant's first and second arguments, Examiner respectfully submitted that that obviousness is determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Hedges*, 783 F.2d 1038, 1039, 228 USPQ 685,686 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785,788 (Fed. Cir. 1984); and *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143,147 (CCPA 1976). Using this standard, the Examiner respectfully submits that he has at least satisfied the burden of presenting a *prima facie* case of obviousness, since he has presented evidence of corresponding claim elements in the prior art and has expressly articulated the combinations and the motivations for combinations that fairly suggest Appellant's claimed invention.

Rather, Appellant does not point to any specific distinction(s) between the features disclosed in the references and the features that are presently claimed. In particular, 37 CFR 1.111(b) states, "A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the reference does not comply with the requirements of this section." Appellant has failed to specifically point out how the language of the claims patentably distinguishes them from the applied references. Also, arguments or conclusions of Attorney cannot take the place of evidence. *In re Cole*, 51 CCPA 919, 326 F.2d 769, 140 USPQ 230 (1964); *In re Schulze*, 52 CCPA

1422, 346 F.2d 600, 145 USPQ 716 (1965); *Mertizner v. Mindick*, 549 F.2d 775, 193 USPQ 17 (CCPA 1977).

In addition, the Examiner recognizes that references cannot be arbitrarily altered or modified and that there must be some reason why one skilled in the art would be motivated to make the proposed modifications. However, although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modifications must be expressly articulated <u>within the references themselves</u>. References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures, *In re Bozek*, 163 USPQ 545 (CCPA 1969).

The Examiner is concerned that Appellant apparently ignores the mandate of the numerous court decisions supporting the position given above. The issue of obviousness is not determined by what the references expressly state but by what they would reasonably suggest to one of ordinary skill in the art, as supported by decisions in *In re DeLisle* 406 Fed 1326, 160 USPQ 806; *In re Kell, Terry and Davies* 208 USPQ 871; and *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ 2d 1596, 1598 (Fed. Cir. 1988) (citing *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)). Further, it was determined in *In re Lamberti et al*, 192 USPQ 278 (CCPA) that:

(i) obviousness does not require absolute predictability;

(ii) non-preferred embodiments of prior art must also be considered; and

(iii) the question is not <u>express</u> teaching of references, but what they would suggest. Therefore, Appellant's argument is not persuasive and the rejection is hereby sustained.

(C) In response to Appellant's third argument that is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the Appellant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the primary reference, Morgan is directed to activity-based costing measures the cost and performance of activities and products. In product costing applications, for example, activity-based costing allows costs to be apportioned to products by the activities and resources consumed in procuring parts or materials, manufacturing, marketing, selling, delivering, and servicing the product. With activity –based costing information, managers are provided a true gauge of the business operations, and can make better strategic business and management decisions and the secondary reference, Ulwick, is drawn to a tool for strategy evaluation and optimization that is adaptable to countless applications. Based on factors that are of particular importance to an individual, and also be used to define personal strategy, help someone determine whether to make a major purchase such as a boat, to select the model of boat that will best suit a person's lifestyle, or to help one choose a career path. However, Ulwick is reasonably pertinent to the particular problem with which Appellant was concerned because the cited reference is in the same field of Appellant's endeavor. Therefore, Appellant's argument is not persuasive and the rejection is hereby sustained.

(D) With respect to Appellant's fourth argument, the Examiner respectfully submitted that He relied upon the clear teaching of Ulwick whom suggested: "As shown in block 208, predictive metrics that were previously created, synergized, and stored are automatically prioritized by the software given the selected customer sets, prioritization algorithm, and importance ratings assigned to the outcomes. The user is then asked if he/she has a proposed solution (block 209). If not, the user is guided to create/document a solution (block 210). If the user has a proposed solution, then he/she documents solutions and constraints. As a next step, the user evaluates each of the documented solutions against the prioritized predictive metrics to determine how much value will be created by each solution (block 212). The percent of desired outcomes satisfied by each solution is automatically quantified. This measure of value is presented to the user as the result of the evaluation (block 213). Next, the user assesses the feasibility of the top solutions using cost, risk, effort, and other factors (block 214). If the user is satisfied with the solution, the user is presented with a formatted worksheet to prepare and document the proactive plans required for implementation and/or continuous improvement. Otherwise, the user is presented with an option to systematically improve the best solution (block 217). The user is presented with physical principles that enhance innovation (block 218). The user documents and stores the new solutions that were enhanced/created using the provided techniques (block 219). The user then repeats the steps from block 212" (See Ulwick, Col.22, lines 54-67 to Col.23, line 12) which corresponded to Appellant's claimed feature. Therefore, Appellant argument is not persuasive and the rejection is hereby sustained.

(E) With respect to Appellant's fifth argument, the Examiner respectfully submitted that He relied upon the clear teaching of Morgan whom suggested in Col.3, lines 55-63 "production measurement system data 36 and human resources system data 38. This accounting data may reside on a data storage device in the form of a database" which corresponded to Appellant's claimed feature. Therefore, Appellant argument is not persuasive and the rejection is hereby sustained.

(F) In response to Appellant's sixth argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account <u>only knowledge which was within the level of ordinary skill at the time the claimed invention was made</u>, and does not include knowledge gleaned only from the Appellant's disclosure, such a reconstruction is proper. See In re McLaughlin, 443F. 2d 1392, 170 USPQ 209 (CCPA 1971).

(G) With respect to Appellant's seventh and eighth arguments, Examiner respectfully submitted that He relied upon the clear teaching of Morgan whom suggested "Responsibility center (R.C.) mapping to management organization is performed in block 126. The user enters the mapping relationship between the responsibility centers and the management organizations, so that the cost allocated to the responsibility centers can be distributed to the management organizations as shown in FIG. 4.

In block 128, the user enters the target or goal cost per unit of each product. This input may be used to gauge the performance of the management organization. In block 130, the percentage of cost allocated to a management organization for overhead activities is entered. The site attributes data entries 132 include a variety of site-specific information. The site attributes 132 include information that may be unique to a specific site. Examples include activities dedicated to serve a particular customer, the production volumes of products, and activity drivers. In addition to inputs that may require entry by users at each site, the operator of the automated activity-based management system 10 may maintain certain system-wide information. Operator control is necessary if an organization needs to ensure consistent definition across multiple sites and avoid duplications. For example, master activities block 140 represents a collection or union of all activities. The master activities list or dictionary is referred to when a site user needs to identify and account for activities performed by a management organization, as in block 116, and is maintained and updated by the system operator or administrator when a new activity is identified. Similarly, a master list of equipment types may be entered, maintained, and updated by the system operator, as in block 142. Further, blocks 144 and 146 represent master lists of products and attributes, respectively, that are entered and maintained for the system 10. The term "products" is used herein to refer to both products and services that are the results of activities. Attributes are labels used to sort and classify data. In the automated activity-based management system 10, attributes are used to classify activities. For example, certain activities may be labeled with the quality attribute Prevention, such as hardware maintenance, training, audits because

the performance of these activities eliminates the opportunity for non-conformance and ensures quality. Another set of activities may have service attributes, which indicate that these activities are related to predefined services provided to the customers. Similarly, there are also activities that are customer-specific, and are labeled with the appropriate attributes so indicating" which correspond to Appellant's claimed feature (See Fig.4, Fig.7; Fig.10; Col.6, lines 32-67 to Col.7, line13). As such, the Examiner respectfully submitted that such terms were given their broadest reasonable interpretations during examination, and since the applied reference clearly discloses the claimed limitations, when given their broadest reasonable interpretations, it is respectfully submitted that the Examiner reliance on Morgan is indeed proper. Therefore, Appellant's argument is not persuasive and the rejection is hereby sustained.

(H) With respect to Appellant's ninth argument, Examiner respectfully submitted that He relied upon the clear teaching of Ulwick whom suggested: "For example, an embodiment directed to optimization of "personal," as opposed to "business," strategies is contemplated wherein the user identifies and ranks desired outcomes as to those outcomes that are important to him/her personally. This embodiment may combine desired outcomes and predictive metric factors obtained through market research and through the individual user's input. Accordingly, the software may be customized by the individual user to optimize personal strategies by factoring in outcomes and metrics established and ranked by the individual as well as outcomes and metrics established by statistically valid research. With reference to FIG. 17, a summary of the software

logic and steps the user goes through is shown. These steps may be generally characterized by the reference numeral 200. First, the user accesses the software 201. The user is then asked if the user wants to access a completed study 202. If the user wants to access a completed study, the user opens an existing file 203. If not, the user selects a subject of interest and a specific mission from stored listing 204. Next, the user selects from a stored list which "customer sets" will be considered when evaluating and/or creating the solutions/strategy 205, after which, the user selects whether to order the stored desired outcomes by importance, dissatisfaction, or opportunity 206. In block 207, the user rates the importance of the relevant desired outcomes personally or selects, from a stored database, the importance ratings placed on those desired outcomes by individuals, segments, or populations previously interviewed using statistically valid, quantitative research methods 207. As shown in block 208, predictive metrics that were previously created, synergized, and stored are automatically prioritized by the software given the selected customer sets, prioritization algorithm, and importance ratings assigned to the outcomes. The user is then asked if he/she has a proposed solution (block 209). If not, the user is guided to create/document a solution (block 210). If the user has a proposed solution, then he/she documents solutions and constraints. As a next step, the user evaluates each of the documented solutions against the prioritized predictive metrics to determine how much value will be created by each solution (block 212). The percent of desired outcomes satisfied by each solution is automatically quantified. This measure of value is presented to the user as the result of the evaluation (block 213). Next, the user assesses the feasibility of the top solutions

using cost, risk, effort, and other factors (block 214). If the user is satisfied with the solution, the user is presented with a formatted worksheet to prepare and document the proactive plans required for implementation and/or continuous improvement. Otherwise, the user is presented with an option to systematically improve the best solution (block 217). The user is presented with physical principles that enhance innovation (block 218). The user documents and stores the new solutions that were enhanced/created using the provided techniques (block 219). The user then repeats the steps from block 212" which correspond to Appellant's claimed feature (See Ulwick, Col.22, lines 25-67 to Col.23, line 13). As such, the Examiner respectfully submitted that such terms were given their broadest reasonable interpretations during examination, and since the applied reference clearly discloses the claimed limitations, when given their broadest reasonable interpretations, it is respectfully submitted that the Examiner reliance on Ulwick is indeed proper. Thus, the teachings of Morgan and Ulwick when considered with the knowledge that is generally available to one of ordinary skill in the art make obvious the limitations that Appellant disputes.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejection should be sustained.

Respectfully submitted,

Vanel Frenel (V-F)

Patent Examiner

Art Unit 3627

October 27, 2007

CONFEREES:

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Carl A. Ronald

Appl. No.: 09/648,861
Applicant(s): Samarth Sarthi, et al.
Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

TRANSMITTAL

To: Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing in the above-captioned application, please find the following:

- Appellants' Amended Brief Before the Board of Patent Appeals and Interferences (in triplicate)

Also enclosed is a return postcard. Please date stamp the postcard and return it to the address thereon in order to acknowledge receipt of the above-mentioned correspondence. The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to our Deposit Account No. 20-0888. A duplicate copy of this Transmittal letter is enclosed.

Respectfully submitted,

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Dated: 25 July 2007

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Appl. No.: 09/648,861
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Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

APPELLANTS' AMENDED BRIEF BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

(1) *Real Party In Interest*

The real party in interest in this case is SCA Holdings, LLC, the assignee of the entire interest of the above-identified patent application.

(2) *Related Appeals and Interferences*

There are no known appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the instant case.

(3) *Status of Claims*

Claims 1 – 41 have been canceled. Claims 42 – 56 are pending in the application and claims 42 – 56 are rejected. Claims 42 - 56 are on appeal.

(4) *Status of Amendments*

No amendments have been filed since the issuance of the final Office action.

(5) *Summary of Claimed Subject Matter*

The subject matter of the claimed invention is, according to claim 42, a computer-implemented method of managing a process. As discussed beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application, this method requires first identifying activities **44** that comprise the process **42** the user wishes to manage or optimize. Then, key drivers **46** and the resources **48** needed for each of the activities are identified.

Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

As discussed beginning at page 4, line 35 and in FIG. 1, independent claim 50 recites a system that comprises a computer **10** having input **14** and ouput devices **18** that holds a computer program **20** in its memory. The computer program, when executed, enables the user to perform the method described beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

As disclosed beginning at page 5, line 9 and in FIG. 1, independent claim 53 teaches a computer-readable storage medium **22** that contains the programming **20** sufficient to enable a user to perform the method beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

(6) *Grounds of Rejection To Be Reviewed On Appeal*

Claims 42-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan, et. al. (U.S. Patent No. 5,799,286) in view of Ulwick (U.S. Patent No. 6,115,691)[1].

(7) *Argument*

The Office has failed to establish a prima facie case of obviousness with respect to claims 42-56.

As set forth in MPEP §§2142, 2143 (Eighth Edition incorporating Revision No. 5, August 2006) a *prima facie* case of obviousness exists when three basic criteria are met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. Importantly, the Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.

[1] This patent cited by the Office did not issue until after the Applicant's patent application was filed and is not properly cited as prior art to the present application. The '691 Ulwick patent, however, appears to have been a continuation of an earlier patent issued to Ulwick on October 5, 1999, U.S. Pat. No. 5,963,910.

Absent making out such a *prima facie* case, the §103(a) rejection of claims 42 – 56, based on Morgan in view of Ulwick, must be reversed.

A. The Office has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

During prosecution, the Office conceded[2] that neither Morgan nor Ulwick explicitly discloses or suggests the desirability of making the modifications of the present invention. While the Supreme Court in the recent case of KSR, Int'l, Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007) rejected a rigid application of the Federal Circuit's "teaching, suggestion, or motivation" test, they nevertheless reiterated the need to *explicitly support* the conclusion that there was "an apparent reason to combine known elements in the fashion claimed by the patent at issue." KSR, at p. 14. The Deputy Commissioner for Patent Operations echoed this point to all Office staff in her May 3, 2007 guidance memorandum, concluding: "...in formulating a rejection under 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed."

In the present case, however, the only reasoning provided by the Office that supports the finding of suggestion or motivation in the art is found at page 3 of the Final Office Action dated May 4, 2006:

---

[2] See page 11 of the Final Office Action dated May 4, 2006 ("...although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modification must be expressly articulated within the references themselves." [emphasis in original])

> It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating [sic] the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process.

It is respectfully submitted that the logic employed by the Office in the quoted language above leads to the untenable conclusion that any improvement to any process would be obvious to those skilled in the art. This is not a convincing line of reasoning because, if taken to its logical conclusion, it would invalidate nearly every process patent that currently exists.

Frankly, Applicants found it extremely difficult to understand the Office's argument in the present case because the combination of Morgan in view of Ulwick actually teaches away from the present application. While Morgan discloses a basic computer-implemented activity-based costing system and method, it does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and is thus not robust enough to handle a modern supply chain evaluation, for example. Ulwick, on the other hand, teaches analyzing customer survey data to find individual measurable parameters that reliably predict the desired outcomes specified by the customers. Importantly, Ulwick does not disclose any method of determining these measurable parameters. Accordingly, combining Morgan with Ulwick would actually lead a person of ordinary skill in the art in a different direction than the present application due to Ulwick's emphasis and reliance on survey data to divine its predictive metrics, rather than modeling and evaluating the process itself to generate specific measurable parameters that predict an improved or desired result. Thus, while optimizing a given process was certainly desirable at the time of the filing of the Applicant's

disclosure, the technique of managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost represents a novel approach that was neither indicated nor suggested to one of ordinary skill in the art at the time the present invention was made.

Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

As for this final element of the prima facie obviousness case, Morgan teaches the breaking down of a process into individual activities and representing the process as a sum of each those activities. Ulwick then discloses using survey data to divine measurable parameters that predict a successful outcome, but does not teach how that is done.

Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

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Dated: 25 July 2007

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(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:
revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components
thereof.

50. A system, comprising:
a computer;
input and output devices in communication with said computer; and
a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:
allow a user to identify activities that comprise a process,
further allow said user to identify measurable drivers for each of the activities,
identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,
establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,
using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.

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JUL 25 2007
PATENT & TRADEMARK OFFICE

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Appl. No.: 09/648,861
Applicant(s): Samarth Sarthi, et al.
Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

APPELLANTS' AMENDED BRIEF BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

(1) *Real Party In Interest*

The real party in interest in this case is SCA Holdings, LLC, the assignee of the entire interest of the above-identified patent application.

(2) *Related Appeals and Interferences*

There are no known appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the instant case.

(3) *Status of Claims*

Claims 1 – 41 have been canceled. Claims 42 – 56 are pending in the application and claims 42 – 56 are rejected. Claims 42 - 56 are on appeal.

(4) *Status of Amendments*

No amendments have been filed since the issuance of the final Office action.

(5) *Summary of Claimed Subject Matter*

The subject matter of the claimed invention is, according to claim 42, a computer-implemented method of managing a process. As discussed beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application, this method requires first identifying activities **44** that comprise the process **42** the user wishes to manage or optimize. Then, key drivers **46** and the resources **48** needed for each of the activities are identified.

Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

As discussed beginning at page 4, line 35 and in FIG. 1, independent claim 50 recites a system that comprises a computer **10** having input **14** and ouput devices **18** that holds a computer program **20** in its memory. The computer program, when executed, enables the user to perform the method described beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

As disclosed beginning at page 5, line 9 and in FIG. 1, independent claim 53 teaches a computer-readable storage medium **22** that contains the programming **20** sufficient to enable a user to perform the method beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

(6) *Grounds of Rejection To Be Reviewed On Appeal*

Claims 42-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan, et. al. (U.S. Patent No. 5,799,286) in view of Ulwick (U.S. Patent No. 6,115,691)[1].

(7) *Argument*

The Office has failed to establish a prima facie case of obviousness with respect to claims 42-56.

As set forth in MPEP §§2142, 2143 (Eighth Edition incorporating Revision No. 5, August 2006) a *prima facie* case of obviousness exists when three basic criteria are met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. Importantly, the Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.

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[1] This patent cited by the Office did not issue until after the Applicant's patent application was filed and is not properly cited as prior art to the present application. The '691 Ulwick patent, however, appears to have been a continuation of an earlier patent issued to Ulwick on October 5, 1999, U.S. Pat. No. 5,963,910.

Absent making out such a *prima facie* case, the §103(a) rejection of claims 42 – 56, based on Morgan in view of Ulwick, must be reversed.

A. The Office has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

During prosecution, the Office conceded[2] that neither Morgan nor Ulwick explicitly discloses or suggests the desirability of making the modifications of the present invention. While the Supreme Court in the recent case of KSR, Int'l, Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007) rejected a rigid application of the Federal Circuit's "teaching, suggestion, or motivation" test, they nevertheless reiterated the need to *explicitly support* the conclusion that there was "an apparent reason to combine known elements in the fashion claimed by the patent at issue." KSR, at p. 14. The Deputy Commissioner for Patent Operations echoed this point to all Office staff in her May 3, 2007 guidance memorandum, concluding: "...in formulating a rejection under 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed."

In the present case, however, the only reasoning provided by the Office that supports the finding of suggestion or motivation in the art is found at page 3 of the Final Office Action dated May 4, 2006:

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[2] See page 11 of the Final Office Action dated May 4, 2006 ("...although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modification must be expressly articulated within the references themselves." [emphasis in original])

> It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating [sic] the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process.

It is respectfully submitted that the logic employed by the Office in the quoted language above leads to the untenable conclusion that <u>any</u> improvement to <u>any</u> process would be obvious to those skilled in the art. This is not a convincing line of reasoning because, if taken to its logical conclusion, it would invalidate nearly every process patent that currently exists.

Frankly, Applicants found it extremely difficult to understand the Office's argument in the present case because the combination of Morgan in view of Ulwick actually teaches away from the present application. While Morgan discloses a basic computer-implemented activity-based costing system and method, it does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and is thus not robust enough to handle a modern supply chain evaluation, for example. Ulwick, on the other hand, teaches analyzing customer survey data to find individual measurable parameters that reliably predict the desired outcomes specified by the customers. Importantly, Ulwick does not disclose any method of determining these measurable parameters. Accordingly, combining Morgan with Ulwick would actually lead a person of ordinary skill in the art in a different direction than the present application due to Ulwick's emphasis and reliance on survey data to divine its predictive metrics, rather than modeling and evaluating the process itself to generate specific measurable parameters that predict an improved or desired result. Thus, while optimizing a given process was certainly desirable at the time of the filing of the Applicant's

disclosure, the technique of managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost represents a novel approach that was neither indicated nor suggested to one of ordinary skill in the art at the time the present invention was made.

Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

As for this final element of the prima facie obviousness case, Morgan teaches the breaking down of a process into individual activities and representing the process as a sum of each those activities. Ulwick then discloses using survey data to divine measurable parameters that predict a successful outcome, but does not teach how that is done.

Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

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Attorneys for Applicants

(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:

revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components

thereof.

50. A system, comprising:

a computer;

input and output devices in communication with said computer; and

a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:

allow a user to identify activities that comprise a process,

further allow said user to identify measurable drivers for each of the activities,

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.

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Appl. No.: 09/648,861
Applicant(s): Samarth Sarthi, et al.
Filed: 25 August 2000
Title: **PRODUCTION AND DISTRIBUTION SUPPLY CHAIN OPTIMIZATION SOFTWARE**
Art Unit: 3626
Examiner: Vanel Frenel
Docket No.: DB000877-000

APPELLANTS' AMENDED BRIEF BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

(1) *Real Party In Interest*

The real party in interest in this case is SCA Holdings, LLC, the assignee of the entire interest of the above-identified patent application.

(2) *Related Appeals and Interferences*

There are no known appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the instant case.

(3) *Status of Claims*

Claims 1 – 41 have been canceled. Claims 42 – 56 are pending in the application and claims 42 – 56 are rejected. Claims 42 - 56 are on appeal.

(4) *Status of Amendments*

No amendments have been filed since the issuance of the final Office action.

(5) *Summary of Claimed Subject Matter*

The subject matter of the claimed invention is, according to claim 42, a computer-implemented method of managing a process. As discussed beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application, this method requires first identifying activities **44** that comprise the process **42** the user wishes to manage or optimize. Then, key drivers **46** and the resources **48** needed for each of the activities are identified.

Next, as disclosed beginning at page 8, line 32, bridge variables are identified **50** wherein each bridge variable is a driver that is relevant to more than one of said activities. A relationship is then established between the drivers by representing each non-bridge variable driver in terms of bridge variables only, thus enabling each activity in the process to be represented as a function **52** of one or more bridge variables in order to reflect the interdependence of the activities. Finally, according to the disclosed method, the entire process to be managed can be expressed as a function of the bridge variables by combining the representations for the activities comprising the process.

Dependent claims add the features of including a set of constraints in the function, optimizing the function for one or a plurality of those constraints, and reconstructing a physical representation of the activities and drivers using the optimized model. The constraints applied to the function, according to claim 48, can be either economic or non-economic.

As discussed beginning at page 4, line 35 and in FIG. 1, independent claim 50 recites a system that comprises a computer **10** having input **14** and ouput devices **18** that holds a computer program **20** in its memory. The computer program, when executed, enables the user to perform the method described beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

As disclosed beginning at page 5, line 9 and in FIG. 1, independent claim 53 teaches a computer-readable storage medium **22** that contains the programming **20** sufficient to enable a user to perform the method beginning on page 6 at line 26 and demonstrated in the flow chart at FIG. 3 of the application.

(6) *Grounds of Rejection To Be Reviewed On Appeal*

Claims 42-56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan, et. al. (U.S. Patent No. 5,799,286) in view of Ulwick (U.S. Patent No. 6,115,691)[1].

(7) *Argument*

The Office has failed to establish a prima facie case of obviousness with respect to claims 42-56.

As set forth in MPEP §§2142, 2143 (Eighth Edition incorporating Revision No. 5, August 2006) a *prima facie* case of obviousness exists when three basic criteria are met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. Importantly, the Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.

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[1] This patent cited by the Office did not issue until after the Applicant's patent application was filed and is not properly cited as prior art to the present application. The '691 Ulwick patent, however, appears to have been a continuation of an earlier patent issued to Ulwick on October 5, 1999, U.S. Pat. No. 5,963,910.

Absent making out such a *prima facie* case, the §103(a) rejection of claims 42 – 56, based on Morgan in view of Ulwick, must be reversed.

A. The Office has not identified any suggestion or motivation in the art to modify the references or to combine reference teachings.

During prosecution, the Office conceded[2] that neither Morgan nor Ulwick explicitly discloses or suggests the desirability of making the modifications of the present invention. While the Supreme Court in the recent case of KSR, Int'l, Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007) rejected a rigid application of the Federal Circuit's "teaching, suggestion, or motivation" test, they nevertheless reiterated the need to *explicitly support* the conclusion that there was "an apparent reason to combine known elements in the fashion claimed by the patent at issue." KSR, at p. 14. The Deputy Commissioner for Patent Operations echoed this point to all Office staff in her May 3, 2007 guidance memorandum, concluding: "...in formulating a rejection under 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed."

In the present case, however, the only reasoning provided by the Office that supports the finding of suggestion or motivation in the art is found at page 3 of the Final Office Action dated May 4, 2006:

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[2] See page 11 of the Final Office Action dated May 4, 2006 ("...although the Examiner agrees that the motivation or suggestion to make modifications must be articulated, it is respectfully contended that there is no requirement that the motivation to make modification must be expressly articulated within the references themselves." [emphasis in original])

> It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the features of Ulwick within the system of Morgan with the motivation of providing systematically accelerating [sic] the evolution of a process or satisfying a set of desired outcomes. A process is a series of activities or events that produce a desired result, which may comprise a plurality of desired outcomes. All strategies, products or services as well as other solutions are designed to improve or enable a process.

It is respectfully submitted that the logic employed by the Office in the quoted language above leads to the untenable conclusion that <u>any</u> improvement to <u>any</u> process would be obvious to those skilled in the art. This is not a convincing line of reasoning because, if taken to its logical conclusion, it would invalidate nearly every process patent that currently exists.

Frankly, Applicants found it extremely difficult to understand the Office's argument in the present case because the combination of Morgan in view of Ulwick actually teaches away from the present application. While Morgan discloses a basic computer-implemented activity-based costing system and method, it does not articulate a model that specifically accounts for the interrelationships between all of the activities and drivers within the overall process and is thus not robust enough to handle a modern supply chain evaluation, for example. Ulwick, on the other hand, teaches analyzing customer survey data to find individual measurable parameters that reliably predict the desired outcomes specified by the customers. Importantly, Ulwick does not disclose any method of determining these measurable parameters. Accordingly, combining Morgan with Ulwick would actually lead a person of ordinary skill in the art in a different direction than the present application due to Ulwick's emphasis and reliance on survey data to divine its predictive metrics, rather than modeling and evaluating the process itself to generate specific measurable parameters that predict an improved or desired result. Thus, while optimizing a given process was certainly desirable at the time of the filing of the Applicant's

disclosure, the technique of managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost represents a novel approach that was neither indicated nor suggested to one of ordinary skill in the art at the time the present invention was made.

Viewing the totality of the Office's arguments, it would appear that the Office has unintentionally relied upon impermissible hindsight in making its determination because there were no facts available to the ordinary artisan at the time of this invention that would suggest it would be beneficial or even possible to represent an entire supply chain process, for example, using only bridge variables to demonstrate the interrelationship between the various activities that make up the process.

The features of the present invention disclosed in Applicant's dependent claims, including, but not limited to: generating the model as a function of bridge variables and a plurality of economic or non-economic constraints, optimizing the model using a linear, mixed integer or mixed integer nonlinear programming algorithm and reconstructing a physical representation of the activities using the optimized model and identifying at least one of fixed and variable components of each driver and costing those drivers for at least one their fixed and variable components, are all nonobvious in light of the cited art as well. "If an independent claim is nonobvious under 35 U.S. C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03 (*citing* In re Fine, 837 F.2d 1071 (Fed. Cir. 1988)).

B. There was no reasonable expectation that combining the prior art would lead to success.

"The prior art can be modified or combined to reject claims as *prima facie* obvious so long as there is a reasonable expectation of success." In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). In the present case, Morgan in view of Ulwick taught an increased reliance on statistical data to determine preferred outcomes and attempting to divine predictive metrics that would enable the user of the method to conform the process to those outcomes. Moreover, Ulwick was noticeably silent on the method of determining those factors that had the most impact on the customer-identified preferred outcomes. There was no reason, at the time of the filing of the present application, that a person of ordinary skill in the art would expect or predict that managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost would be successful, especially since Ulwick was teaching away from such an analysis.

C. The prior art references, when combined, do not teach or suggest all the claim limitations.

As for this final element of the prima facie obviousness case, Morgan teaches the breaking down of a process into individual activities and representing the process as a sum of each those activities. Ulwick then discloses using survey data to divine measurable parameters that predict a successful outcome, but does not teach how that is done.

Morgan in view of Ulwick does not teach managing a process by generating a model of that process using key activity drivers that drive cost for more than one activity, identifying the

relationships between those key activity drivers, and then harnessing those relationships to optimize and manage the business process for cost. Furthermore, the cited references neither teach nor suggest adding a plurality of economic or non-economic constraints to the model that was created, nor do they teach optimizing said model via the application of a linear or nonlinear programming algorithm.

CONCLUSION

For the reasons set forth above, it is respectfully requested that the rejection of claims 42 - 56 be reversed.

Respectfully submitted,

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(8) *Claims Appendix*

42. A computer-implemented method of managing a process, said computer-implemented method comprising:

identifying activities that comprise the process;

identifying measurable drivers for each of the activities;

identifying bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establishing a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, representing each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said activities; and

generating a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

43. The computer-implemented method of claim 42, further comprising:

selecting a plurality of constraints,

and wherein generating said model of said process includes generating said model as a function of said bridge variables and said plurality of constraints.

44. The computer-implemented method of claim 43, further comprising:

optimizing said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstructing a physical representation of said activities and said drivers using said optimized model.

45. The computer-implemented method of claim 44, wherein said reconstructing includes calculating a value of each non-bridge variable driver using values of corresponding bridge

variables only, and calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

46. The computer-implemented method of claim 44, further comprising:
revising said model using the results from said optimization step.

47. The computer-implemented method of claim 43, wherein selecting said plurality of constraints includes selecting economic and non-economic constraints.

48. The computer-implemented method of claim 42, wherein identifying measurable drivers includes identifying economic and non-economic drivers.

49. The computer-implemented method of claim 42, wherein identifying said drivers includes identifying at least one of fixed and variable components of each said driver, and wherein said method further comprising costing each said measurable driver for said at least one of fixed and variable components
thereof.

50. A system, comprising:
a computer;
input and output devices in communication with said computer; and
a memory encoded with a computer program, which, when executed by said computer, causes said computer to perform the following:
allow a user to identify activities that comprise a process,
further allow said user to identify measurable drivers for each of the activities,
identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities,
establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only,
using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence

between said activities, and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

51. The system of claim 50, wherein said computer program, upon execution by said computer, causes said computer to further perform the following:

further allow said user to select a plurality of constraints;

incorporate said plurality of constraints in said model of said process;

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

reconstruct a physical representation of said activities and said drivers using said optimized model.

52. The system of claim 51, wherein said computer program, upon execution by said computer, causes said computer to perform said reconstruction by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

53. A computer-readable data storage medium containing program instructions, which, when executed by a processor, cause said processor to perform the following:

allow a user to identify activities that comprise a process;

further allow said user to identify measurable drivers for each of the activities;

identify bridge variables, wherein each bridge variable is a driver that is relevant to more than one of said activities;

establish a relationship between various drivers by representing each non-bridge variable driver in terms of one or more of said bridge variables only;

using said relationship, represent each of said activities at least as a function of one or more of said bridge variables, thereby reflecting interdependence between said

activities; and

generate a model of said process at least as a function of said bridge variables by combining representations of all activities comprising said process.

54. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to further perform the following:

further allow said user to select a plurality of constraints;

include said plurality of constraints in said model of said process; and

optimize said model in view of said plurality of constraints using one of the following:

a linear programming algorithm,

a mixed-integer linear programming algorithm, and

a mixed-integer nonlinear programming algorithm; and

revise said model using the results from optimizing said model.

55. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to reconstruct a physical representation of said activities and said drivers by calculating a value of each non-bridge variable driver using values of corresponding bridge variables only and by calculating a value of each said activity using values calculated for each bridge variable driver and non-bridge variable driver of said activity.

56. The storage medium of claim 53, wherein said program instructions, upon execution, cause said processor to cost each said driver identified by said user.

(9) *Evidence Appendix*

None.

(10) *Related proceedings appendix*

None.